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ABSTRACT

Characteristic reform measures that perfect the status quo and maintain educational order have become outdated and irrelevant to our times. Educators are calling for leaders with the ability to sense organizational needs from a holistic approach and with the insight or intuitive feel for what the organization can become. Such activity depends upon the complementary incorporation of left-brain processes of analysis and judgment with right-brain visionary, or conceptual, skills. Recent research does not present a positive picture of the superintendent as an agent for change, in that most superintendents have been found to be analytical and technical in the problem-solving approach, rather than intuitive and conceptual. This paper describes a study that confirms these findings. The study explored brain dominance styles prevalent among 115 Tennessee school supervisors, principals, and superintendents, most of whom were nominated by an expert panel on the basis of outstanding leadership. Subjects reported on their cognitive styles (based on brain dominance) by completing the Herrmann Brain Dominance Survey. Results were compared with subjects' individual rankings assigned by their nominators on the basis of technical, human, and conceptual skills (based on definitions developed by Robert L. Katz). Implications are that educational leaders must develop a new, visionary perspective oriented to the building of human potential. Included are 7 figures, 8 tables, and 16 bibliographic references. An appendix includes further information on R. Herrmann's brain profiles and classifications as well as administrator rating definitions adapted from Katz. (IW)

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Administrative Brain

Dominance Styles

Presented to the

Southern Regional Council on Educational Administration

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ADMINISTRATIVE BRAIN DOMINANCE STYLES

If the crisis in American public education is to remain a tolerable pressure, the educational leaders must become a catalyst for organizational reform. It is not enough to "defend the tower," one must articulate a new way of doing business (Thomas, 1981).

I. Introduction

Reform has become the watchword for education in the 1980s! Demands for accountability have set the system "spinning" in every direction: competency testing, basic skills, teacher appraisal, and career ladder are but a few examples.

Central to all these "remedies" is a systematic perfection of routines and procedures which Dyer and Dyer (1965) would classify as characteristic approaches used by custodial organizations to institute change. Collectively such reform measures represent techniques and bureaucratic structures designed to perfect the status quo and maintain an educational order which is outdated and irrelevant to our times.

Such measures, of themselves, will not bring reform. Instead, reform must evolve from a holistic consideration of the organization as part of a dynamic environment. Actualizing such reform may require a new style of leadership! Dyer and Dyer (1965) suggest that leadership reflects a society's expectations. While the traditional maintenance style administrator may have been a "genius sui generis" in prior days, such a style is incompatible with an evolving questioning age. Today leaders must be conceptualizers who can direct the organization toward new pathways of change. As Paulson (1971) states:

In times of strategic change, the organization must be able to look to him (the leader) as the "Moses" leading it through the wilderness toward a vision that is clear only to a few.

The embodiment of purpose through the leadership process requires that the leader possess the ability to sense organizational needs from a holistic approach and that he/she have an insightfulness or intuitive feel for what the organization can become. Greenleaf (1977) defines such an ability as the mark of leadership; Katz (1974) considers it the most important of all leadership skills at the top level of administration.

II. Research Background

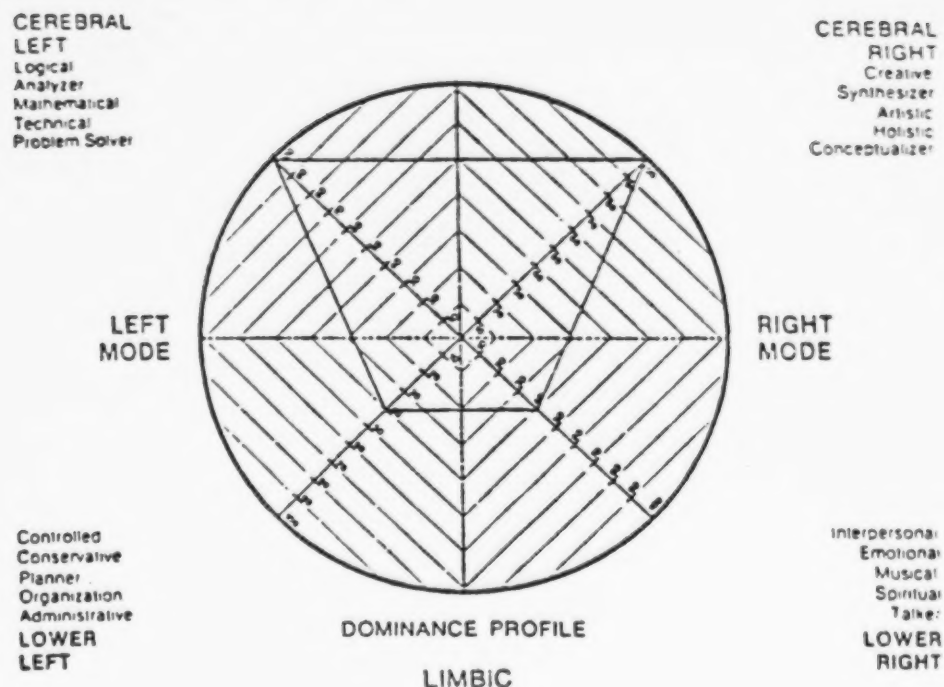
Conceptualization: A Right-Brained Process

Suojanen (1976) suggests that visionary ability, or conceptual skill, is a result of the thinking process characterized by the right brain. The integration of the concept and the implication of a strategy, however, are dependent upon the complementary incorporation of the left-brain process of analysis and judgment. He explains:

It is clear that the truly creative individual is one in whom a balance exists between the cerebral hemispheres. . . . Serendipity then is a symbiosis of the Gestalt of the RHB and the analytical functioning of the LHB out of which new knowledge emerges. (p. 23)

In his model of hemispheric patterns, Herrmann (1980) suggests that both analytical and conceptual skill are cerebral in nature involving a "thinking" rather than "feeling" orientation. The left cerebral hemisphere is the domain of the logical, analytical problem solving skills; whereas, the cerebral right hemisphere is adept at conceptualizing and viewing things in a holistic manner. (See Figure 1 for an illustration of this inter-hemispheric dominance.)

Figure 1. Dominance Styles: Analysis vs. Conceptualization



The Role of the Superintendent

According to Katz (1974), the important skill of conceptualization becomes most crucial as one ascends in leadership rank. The chief executive is the focal point and determiner of change in an organization. The school superintendent, the chief executive officer of the local school association, executes this role for the educational system. It is especially crucial that the superintendent help to clarify purpose.

According to Weick (1976), educational systems lack a "consensus on goals and the means to attain those goals" as well as an "unpredictability of problems and of resources to those problems" (p. 673). This makes it difficult for the

organization to operate in a typical bureaucratic structure of inter-dependence. Because the ties among educators are weaker than they are in other kinds of organizations (due to less inter-dependence), there is a necessity to strengthen and clarify the purpose that unites individual educators to the organization. Weick suggests that this infusion of purpose is dependent upon the leaders' ability to articulate "a common vision."

The chief executive not only conceptualizes the purpose for the organization, but she/he sets the "tone" for the way in which that organization will operate. The superintendent is responsible to a large degree for the innovation that will be displayed by others in schools. Osborn (1957) says, "The ideal top executive is both a creative pace-setter and a creative coach. He cultivates the creativity of those around him and makes it bloom. Above all else, he must feel a real regard for the power of ideas" (p. 346).

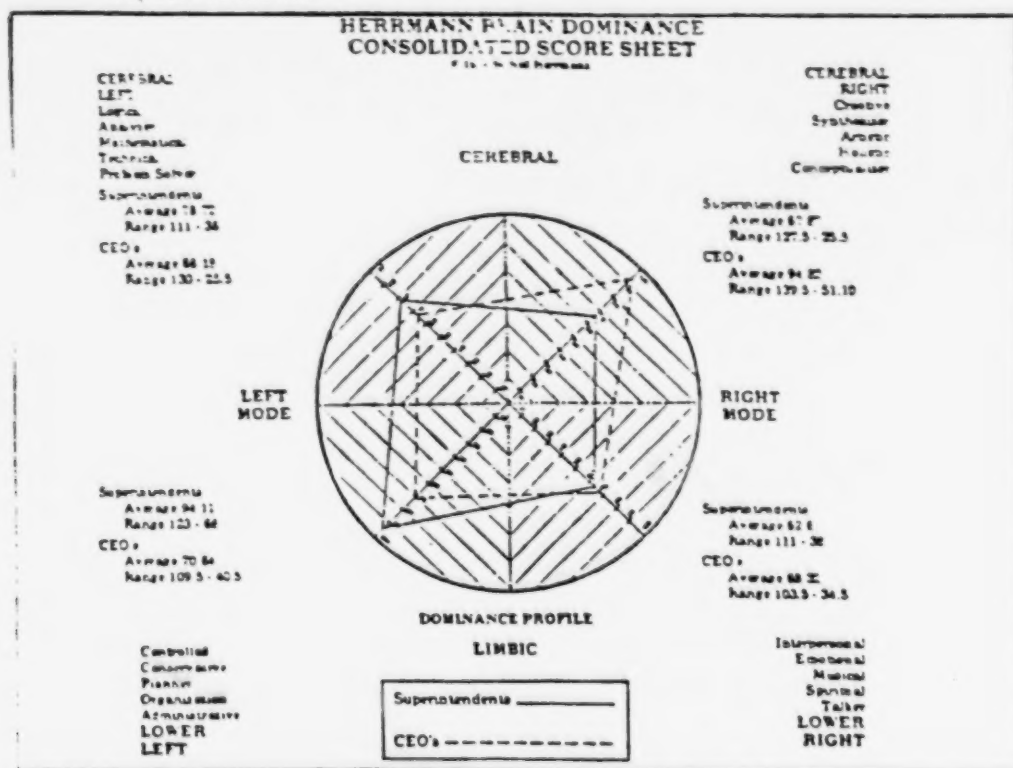
Summary of Research

Have superintendents demonstrated that they are, and will continue to be, innovative leaders who support change? Research does not suggest that this is the case. Schneider (1973) in "Roadblocks to Reform" discusses the research of Zeigler, who studied the change process in education. Zeigler's research does not present a positive picture of the superintendent as an agent for change. The conclusions of Zeigler's study suggest that, "What the superintendent generally wants, unfortunately for the reformers and critics, is status quo" (Schneider, 1973:3).

Implications from Zeigler's study are that the small percentage of male teachers who remain in the teaching profession for more than five years (and from whom the majority of current administrators are selected) tend to become usually conservative and unwilling to take risks (Schneider, 1973). This research is confirmed by the recent research by Coulson (1984) in which superintendents

were compared with Chief Executive Officers and shown to be quite left-brained (analytical rather than conceptual). As demonstrated in Figure 2, the CEOs are more balanced in the use of both cerebral hemispheres than are superintendents; they also demonstrate a far greater use of the right hemisphere.

Figure 2. Comparison of Brain Dominance of Chief Executive Officers with School Superintendents



A more recent study by Norris (1984) supports Coulson's findings. Superintendents in the Norris study were found to be analytical and technical in their problem solving approach rather than intuitive and conceptual. This paper describes that study and summarizes the more significant findings.

III. Introduction to the Study

Purpose

The study reviewed in this paper explored the brain dominance styles prevalent among Tennessee school administrators at ascending levels of responsibility: supervisors, principals, and superintendents. Subjects' cognitive style (based on brain dominance) was compared with their individual rankings assigned by expert nominators on the basis of technical, human and conceptual ability (Katz, 1974). The study was, in part, an attempt to determine prevalent styles, as well as to establish possible significance between certain Katz' skills and a related brain quadrant dominance on the Herrmann Brain Dominance Survey. This paper addresses those aspects from the original study.

Procedures

The study consisted of 115 public school administrators: 103 selected by an expert panel on the basis of outstanding leadership and 12 selected as a random sample from among the pool of remaining superintendents in the state. Comprising the sample were 27 nominated superintendents (27 male, 0 female); 39 principals (28 male, 11 female); 37 supervisors (14 male, 22 female); and 12 random sample superintendents (11 male, 1 female).

Subjects completed a self-report assessment of their brain dominance style, The Herrmann Brain Dominance Survey. In addition, each subject was ranked individually by his/her nominator(s) on the basis of the Katz' skills (i.e., technical, human, conceptual) they most prominently displayed.

Questions to Guide the Study

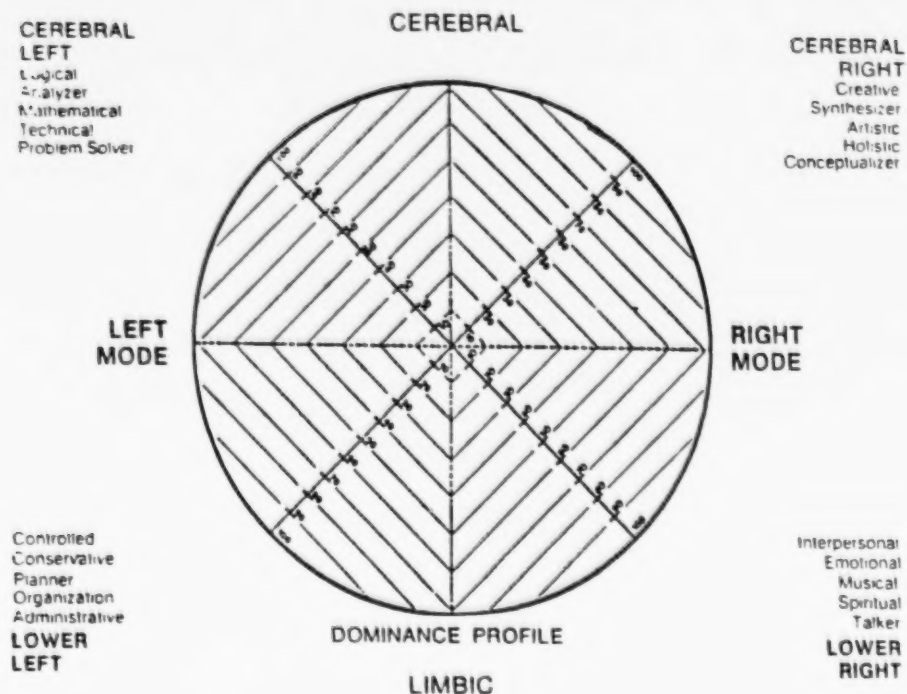
The study was developed by considering a series of questions designed to guide the investigation. Questions, from the original study, to be considered in this paper are the following:

- 1) What brain dominance patterns are most prevalent among the following groups: nominated superintendents, random sample superintendents, principals, and supervisors?
- 2) What are the differences among these groups in terms of dominance patterns? What differences exist between males and females?
- 3) What are the rankings for each group on the Katz' skills?
- 4) Is there a significance between the strength of dominance (i.e., #1, 2 or 3) in a respective brain quadrant and nomination rankings on a specific Katz' skill?

Instrumentation

Herrmann Brain Dominance Survey. The test selected to determine administrative brain dominance style was the Herrmann Brain Dominance Survey. This instrument is built on the theoretical concepts of left-right brain hemisphericity as well as the triune brain concept as theorized by McLean (1950). As demonstrated in Figure 3, the Herrmann model arranges left-right brain patterns into both cerebral and limbic portions resulting in a quadrant view of brain dominance. Herrmann theorizes that man's thought processes are governed by both the left-right cerebral cortex (thinking) as well as the left-right limbic/reptilian (feeling) areas of the brain. Man is directed at all times by the total influence of all parts of his brain; however, he develops, over time, a cognitive style, or dominance pattern, which becomes more habitually directed by one or more specific brain quadrants. The four quadrants in the Herrmann model are identified as follows: (1) cerebral left - analytical, logical; (2) cerebral right - conceptual, creative; (3) limbic left - organized, status quo; and (4) limbic right - emotional, interpersonal.

Figure 3. Herrmann Dominance Model



Each quadrant of the survey could receive one of three scores: 1 (primary dominance), 2 (secondary dominance), and 3 (minimal use). Cut off scores were utilized to determine the assignment of respective scores: 67-100 = 1; 34-66 = 2; 2-33 = 3. The Appendix continues a listing of predominate codes, clusters and classifications from this instrument.

Nomination Rankings/Katz' Skills

Subjects were ranked by their nominators according to the three leadership skills identified by Katz (1974): technical, human, and conceptual. Each received a ranking of 1 for the skill most indicative of his/her ability, 2 for the second

most characteristic skill, and a 3 for the skill least representative of his/her management expertise. This method allowed for a forced choice whereby each subject received each numerical ranking only once. (Refer to Appendix for definitions of rankings.)

A distinction was made by the researcher between technical skill as represented by analytical, business expertise (Technical I) and technical skill of a more general managerial, organizational mode (Technical II). Since technical skill was not divided at the time of nomination ranking, the total category was used to examine both possible aspects of the technical definition.

Brain Quadrants Compared to Katz' Skills

The Herrmann brain quadrants were examined in relation to Katz' administrative skills.

Figure 4. Brain Dominance Position Katz Skills

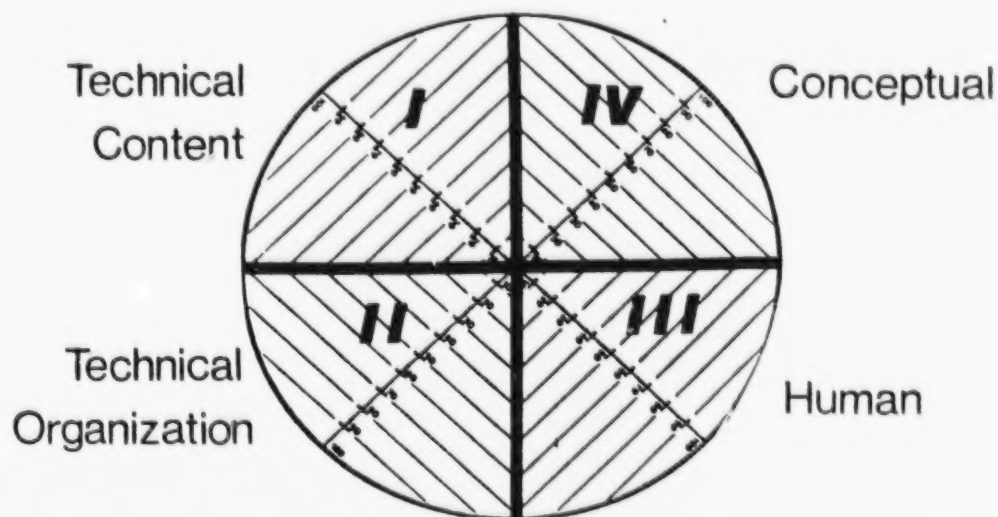


Figure 4 shows the Katz' skills superimposed on the quadrant most theoretically appropriate to each. Each position value in the individual brain dominance code was compared with the value of the nomination ranking identified with the appropriate quadrant. As an example, in the dominance code 2132, the position codes are:

I	II	III	IV
2	1	3	2

(Roman numerals represent respective quadrants while numerals stand for the strength of dominance in that quadrant.)

Position I relates to technical skill as it applies to logical, analytical reasoning; Position II more closely relates to technical skill defined as organizational ability; Position III relates to human relations skill; and Position IV relates to creative or conceptual skill.

IV. Presentation/Discussion of Findings

Introduction to Questions

Data in this paper will be presented as it relates to each exploratory question previously listed. Each question will serve as an introductory point resulting in two sections of data presentation: (1) questions 1 and 2; (2) questions 3 and 4. A discussion of each section will follow its presentation of data.

Presentation of Findings, Questions 1 and 2

Question 1. What brain dominance patterns are most prevalent among the following groups of educational leaders: nominated superintendents, random sample superintendents, principals, and supervisors?

Question 2. What are the differences among these groups in terms of dominance patterns? What differences exist between males and females?

Table I presents the frequency distribution by dominance codes for all subjects. As demonstrated, the most prevalent codes were: 1122 (N = 29); 1121 (N = 16); and 1111, 1112, and 2111 (N = 11, respectively). These 5 codes account for a total of 78 (76%) of the 103 subjects in the nominated sample. The random sample reveals 6 subjects (50%) with the 1122 code and 3 (25%) with the 1112 code.

Table I
Frequency Distribution Administrators/Supervisors
by Brain Dominance Code in Tennessee, 1984

Dominance Code	Nominated Sample (N=103)				Random Sample (N=12)			
	Frequency	Cumulative Frequency	Percent	Cumulative Percent	Frequency	Cumulative Frequency	Percent	Cumulative Percent
1111	11	11	10	10	0	0	0	0
1112	11	22	11	21	3	3	25	25
1121	16	38	16	37	0	3	0	25
1122	29	67	28	65	6	9	50	75
1123	1	68	1	66	0	9	0	75
1131	1	69	1	67	0	9	0	75
1132	1	70	1	68	1	10	8	83
1211	1	71	1	69	0	10	0	83
1221	3	74	3	72	1	11	9	92
2111	11	85	11	83	0	11	0	92
2112	7	92	7	89	1	12	8	100
2121	4	96	4	93	0	12	0	100
2122	5	101	5	98	0	12	0	100
2211	2	103	2	100	0	12	0	100

Table II shows that the 1122 code (left-brained) is most prevalent for all groups. Note that principals and supervisors have the more holistic codes of 1121 and 2111 as a close second.

Table II
Frequencies and Percentages of Most Prevalent Dominance
Patterns Among Administrators (N = 115)
in Tennessee, 1984

Group	#1 Code	N	%	#2 Code	N	%	#3 Code	N	%	Total %
Nominated Superintendents	1122	10	37%	1112	5	19%	1111	3	12%	68%
Principals	1122	11	29%	1121	9	23%	1111	5	13%	65%
Supervisors	1122	8	22%	2111	8	22%	2112	6	17%	61%
Random Sample Superintendents	1122	6	50%	1112	3	25%	--	-	-	75%

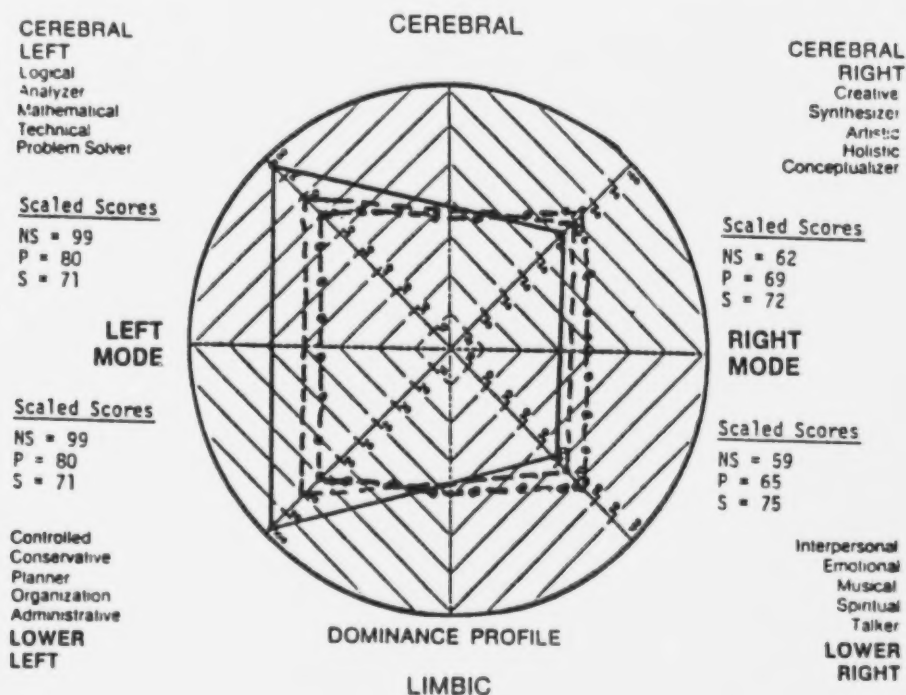
Table III shows comparisons of the means for all groups when brain dominance is represented by a total of left vs. right-brain raw score. Of the groups, supervisors have the highest mean for right-brain dominance; random sample and nominated superintendents have the highest left-brained scores.

Table III
Means for Left/Right Brain Dominance by
Administrative Group in Tennessee, 1984

Variable	Number	Mean	Standard Deviation	Minimum	Maximum	Standard Error	Sum	Variance
<u>Nominated</u>								
Superintendents								
Right	27	77.89	19.88	45	121	3.83	2103	395.10
Left	27	128.11	8.95	113	142	1.72	3459	80.18
Principals								
Right	39	88.69	21.18	59	158	3.39	3459	448.38
Left	39	118.67	16.69	82	148	2.67	4628	278.49
Supervisors								
Right	37	97.95	28.29	55	185	4.65	3624	800.05
Left	37	105.46	20.76	47	136	3.41	3902	431.09
Total Group								
Right	103	89.18	24.74	45	185	2.44	9186	611.84
Left	103	116.40	18.92	47	148	1.86	11989	358.02
<u>Random Sample</u>								
Superintendents								
Right	12	75.83	18.16	42	109	5.24	910	329.97
Left	12	131.83	15.04	91	150	4.34	1582	226.33

Based on new raw scores, data are charted in Figure 5. Similarities are revealed among the three nominated groups (i.e., superintendents, principals, and supervisors) as demonstrated. First, as a group these administrators appear quite similar in the degree of conceptual-creative style that they display as demonstrated by their scores in the upper right quadrant. The scaled score mean for each nominated group falls between 62 and 72. A similar finding appears in the lower left quadrant representing organizational ability and status quo orientation where the mean scaled scores for all groups fall between 71 to 99 points.

Figure 5. Profiles of Nominated Superintendents, Principals and Supervisors

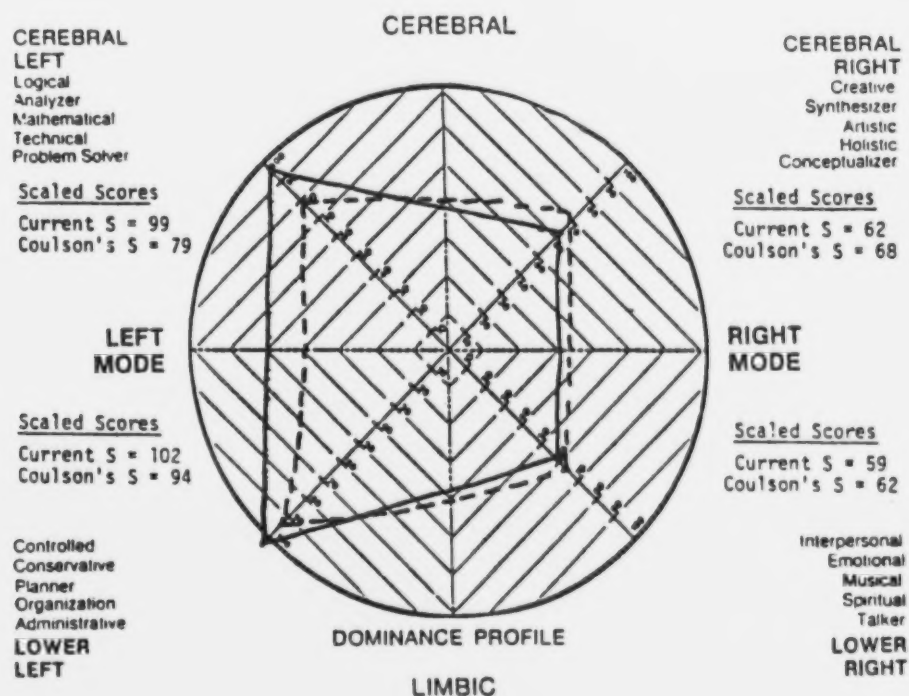


NS = Nominated Superintendents; P = Principals; S = Supervisors

Comparison of Results of This Study to Coulson's Recent Research of Superintendents

Findings of this study support the research by Coulson (1983) in which he examined the dominance styles of school superintendents. Although the Coulson group was a random sample, in contrast to the sample in this study being selected on the basis of judged effectiveness, little difference exists in cognitive pattern.

Figure 6. Dominance Profiles of School Superintendents in Current Study and School Superintendents in Coulson Study



Coulson's S = Superintendents in Coulson's Study
 Current S = Nominated Superintendents in Current Study

Males vs. Females

The chart in Figure 7 shows that females in this study were predominately right-brained/whole-brained (78%), while males were approximately evenly distributed between right-brained/whole-brained and left-brained/limbic (49 to 51%).

Figure 7. Right-Brain/Whole-Brain vs. Left-Brain/Limbic Dominance for Males and Females in Tennessee, 1984

Right/Whole 49%	Left/Limbic 52%	Right/Whole 78%	Left/Limbic 21%
Male (N = 70)		Female (N = 33)	

Discussion of Questions 1 and 2

Prevalence of dominance code patterns, as well as raw scores of left/right hemisphere, indicate that there is a definite tendency toward a left-brained cognitive style among school administrators in this study. As a group, school superintendents appear to have a stronger orientation in that direction than do either of the other two groups. This is evidenced not only by their high mean score in the left hemisphere (nominated superintendents: left - 128; right - 78; random sample superintendents: left - 132; right = 76) as shown in Table I, but also by the prevalence of left-brained dominance codes among this group. From the three most prevalent dominance codes of superintendents (Table II), 37 percent of the nominated superintendents and 50 percent of the random sample superintendents received the strong left-brained code of 1122. The 1112 code (nominated superintendents - 19%; random sample superintendents - 25%), although more holistic than the 1122 code, lacks a dominance in the upper right quadrant denoted for conceptualized thinking. Only 12 percent (3 subjects) of the nominated

sample of school superintendents showed a #1 dominance in that quadrant (Table II); it was non-existent for the random sample!

There is a somewhat more holistic pattern of cognitive style among principals and supervisors. In terms of dominance codes, 36 percent of the principals demonstrated a strength in the upper right-brain quadrant (Table II: 1121, 23%; 1111, 13%). Among supervisors, 22 percent were shown to have a dominance code of 2111 which has a strong right-brain orientation.

One possible explanation for the differences found to exist between superintendents and the other two groups might relate to female/male variations in style (Figure 7). Females were found to be more oriented toward a whole brained/right brained style than were males in this study (Females: 78% right, 21% left; Males: 49% right, 52% left). It is significant to note that there were no females in the nominated sample of superintendents and only 1 in the random sample. In contrast, they comprised 35 percent of the principals group and 70 percent of the supervisors.

Whatever the explanation, there is among the school superintendents in this study a definite dirth in the underlying cognitive thought patterns attributed to the ability to conceptualize. Just how do these findings relate to the manner in which their leadership style (although judged effective) was rated by their nominators? This issue will be considered in the following section of data presentation.

Presentation of Questions 3 and 4

Question 3: What are the rankings for each group on the Katz' skills?

Question 4: Is there a difference between the strength of dominance (i.e., #1, 2, or 3) in a respective brain quadrant and nomination rankings on a specific Katz skill?

Administrators in this study were ranked by the nominators according to the three leadership skills identified by Katz (1974): conceptual, human, and technical (see Appendix).

Table IV presents the frequency distributions and percentages of subjects receiving such rankings for each administrative group. As shown, superintendents ranked highest in technical skill (45%) and lowest in conceptual skill (15%); principals ranked highest in conceptual skill (36%) and lowest in technical skill (31%); while supervisors ranked highest in human skills (41%) and lowest in conceptual and technical skills, respectively (30%).

Table IV
Frequency Distribution Conceptual, Human, Technical
Nominations by Administrative Group and
Nomination Rank in Tennessee, 1984

		Superintendents				Principals				Supervisors			
Rank		Conceptual	Human	Technical	Total	Conceptual	Human	Technical	Total	Conceptual	Human	Technical	Total
1	Number	4	11	12	27	14	13	12	39	11	11	11	37
	Percent of Group	(15%)	(41%)	(45%)	101	(36%)	(34%)	(31%)	101	(30%)	(41%)	(30%)	101
2	Number	9	12	6	27	10	18	11	39	8	15	14	37
	Percent of Group	(34%)	(45%)	(23%)	102	(26%)	(47%)	(29%)	102	(22%)	(41%)	(38%)	101
3	Number	14	4	9	27	15	8	16	39	18	7	12	37
	Percent of Group	(52%)	(15%)	(34%)	101	(38%)	(21%)	(41%)	100	(49%)	(19%)	(33%)	101
Total Number		27	27	27		39	39	39		37	37	37	
Total Percent		101	101	102		100	102	101		101	101	101	

NOTE: Percent may not = 100 due to rounding.

The total group was viewed in terms of whole-brain/right vs. left-brain/limbic dominance in relation to administrative skill and nomination rank. Table V contains Chi Square analysis for each of the administrative skills based on dominance classification and nomination rank. Results of the Chi Square analysis ($p < .05$) indicate that those most likely to receive a high ranking on conceptual skill were whole-brained/right-brained in cognitive style (23% right vs. 5% left). Those receiving a lower ranking on conceptual skill were more evenly divided between right and left-brain style (24 to 21%).

Table V

Percentage of Right and Left Hemisphere Subjects by Rank
of Nomination and Classification Conceptual, Human and
Technical Skill (N = 103) in Tennessee, 1984

Nomination Rank	Conceptual			Human			Technical		
	Right	Left	Total	Right	Left	Total	Right	Left	Total
1	24 (23%)	5 (5%)	37 (28%)	21 (20%)	18 (17%)	39 (38%)	15 (15%)	20 (19%)	35 (34%)
2	11 (11%)	16 (16%)	27 (26%)	29 (28%)	16 (15%)	45 (44%)	20 (19%)	11 (11%)	31 (30%)
3	25 (24%)	22 (21%)	47 (46%)	10 (10%)	9 (9%)	19 (18%)	25 (24%)	12 (12%)	37 (36%)
Total	60 (58%)	43 (42%)	103 (100%)	60 (58%)	43 (42%)	103 (100%)	60 (58%)	43 (42%)	103 (100%)
Chi Square 11.06 df=2 Probability .004			Chi Square 1.26 df=2 Probability .53 ns			Chi Square 5.23 df=2 Probability .07			

These findings are further substantiated through a series of t-tests in which the right-brain score of conceptual ranking number 1 was compared with the right-brain score of technical ranking number 1. Table VI presents these data which support the conclusion that conceptual skill, as determined by highest nomination rank, is more closely related to right-brain dominance than is technical skill. This is true for the total group ($p = .0004$) and for the nominated superintendents ($p = .01$). It is true, but not significant, to a lesser degree for principals ($p = .07$) and supervisors ($p = .13$).

Table VI
t-Test--Conceptual #1 and Technical #1 by Right Brain Score
 for Administrative Groups in Tennessee, 1984

	Number	Mean	Standard Deviation	Standard Deviation Error	Minimum	Maximum	t-test	Degrees of Freedom	Probability
<u>Total Group</u>									
Conceptual #1	29	102.68	28.31	5.25	66	185	3.77	50	.0004*
Technical #1	35	78.82	20.77	3.51	45	150			
<u>Superintendents</u>									
Conceptual #1	4	105.50	18.30	9.15	79	121	3.80	4	.01*
Technical #1	12	67.08	14.84	4.28	45	88			
<u>Principals</u>									
Conceptual #1	14	97.07	25.81	6.89	69	158	1.86	21	.07 ns
Technical #1	12	82.00	14.49	4.18	65	115			
<u>Supervisors</u>									
Conceptual #1	11	108.81	34.49	10.39	66	185	1.56	18	.13 ns
Technical #1	11	88.18	26.82	8.08	55	150			

*Significant ($p \leq .05$).

A similar finding was revealed when a t-test was used to compare the right brain scores of those individuals receiving a nomination rank of 1 in conceptual skill against those receiving nomination ranks of 2 or 3. As shown in Table VII, results clearly support the likelihood that superintendents nominated as highly conceptual (i.e., "1") will also be right-brained ($p = .03$). Results for the other two groups are not significant, but they tend toward the same conclusion (principals at $p = .10$ and supervisors at $p = .19$).

Table VII

t-Test--Conceptual #1 and Conceptual #2 or #3 by Right Brain

Score for Administrative Groups in Tennessee, 1984

	Number	Mean	Standard Deviation	Standard Deviation Error	Minimum	Maximum	t test	Degrees of Freedom	Probability
<u>Superintendents</u>									
Conceptual #1	4	105.50	18.30	9.15	79	121	3.32	3.8	.03*
Conceptual #2	23	73.08	16.07	3.35	45	109			
<u>Principals</u>									
Conceptual #1	14	97.07	25.81	6.89	69	158	1.70	19.4	.10 ns
Conceptual #2	25	84.00	16.88	3.37	59	124			
<u>Supervisors</u>									
Conceptual #1	11	108.81	34.49	10.39	66	185	1.35	14.5	.19 ns
Conceptual #2	26	93.34	24.54	4.81	55	150			

*Significant ($p \leq .05$).

The final stage of analysis employed in this question was to isolate each position value in the individual brain dominance code and to measure the value of that position in terms of the qualities it represented against the Katz skill that most nearly represented what that quadrant of the brain was purported to measure. (Refer back to page 8 for further explanation.)

A Chi Square analysis was used to investigate the relationships among the variables of Katz skill rank against brain dominance position value, or code, as shown in Table VIII.

Table VIII

Results of Chi Square Analyses of Katz' Administrative Skill Ranking

by Dominance Position Value for Total Group (N = 103)

in Tennessee, 1984

Rank	Technical Skill/ Position I			Technical Skill/ Position II			Human Skill/ Position III			Conceptual Skill/ Position IV		
	Dominance Code Value			Dominance Code Value			Dominance Code Value			Dominance Code Value		
	1	2+3	Total	1	2+3	Total	1	2+3	Total	1	2+3	Total
1	29 (29%)	6 (6%)	35 (34%)	34 (33%)	1 (1%)	35 (34%)	21 (20%)	18 (17%)	39 (38%)	23 (22%)	6 (6%)	29 (28%)
2	21 (20%)	10 (10%)	31 (30%)	29 (28%)	2 (2%)	31 (30%)	15 (15%)	30 (29%)	45 (44%)	9 (9%)	18 (17%)	27 (26%)
3	24 (23%)	13 (13%)	37 (36%)	34 (33%)	3 (3%)	37 (36%)	7 (7%)	12 (12%)	19 (18%)	17 (17%)	30 (29%)	47 (46%)
Total	74 (72%)	29 (28%)	103 (100%)	97 (94%)	6 (6%)	103 (100%)	43 (42%)	60 (58%)	103 (100%)	49 (48%)	54 (52%)	103 (100%)
	Chi Square 3.24 df=2 Probability .19			Cells to Sparse to Compute			Chi Square 3.85 df=2 Probability .15			Chi Square 16.35 df=2 Probability .0003		

Table VIII reveals that position value is highly significant ($p = .0003$) for all subjects when the dominance code of Position IV is analyzed relative to the ranking that subjects received on conceptual skill. Although non-significant, data tended in the expected direction for the analysis of Position III and human skills ($p = .15$) and for Position I and technical skill ($p = .19$). A Chi Square analysis was not possible for Position II due to small cell size in key cells; however, a review of the percentages indicates a definite trend for those nominated #1 Technical Skill to be dominant in Position II (i.e., 33% - 1%).

Discussion of Katz Rankings/Dominance

Subject rankings on the Katz' skills tend to support the dominance strengths/weaknesses displayed by each group. Superintendents, classified as having a left-brained cognitive style, were ranked highest by their nominators in technical skill and lowest in conceptual ability. As demonstrated in Table IV, a total of 52 percent of the superintendents ranked lowest in exhibited conceptual ability, while only 14 percent (4 superintendents) received the highest rankings in this skill. In contrast, a total of 45 percent ranked highest in technical ability. Principals (who tended toward a balance in left/right brain skills) showed a fairly even distribution of #1 rankings among the three skills (i.e., conceptual: 36%; human: 34%; and technical: 31%). Of the three groups, principals received the highest rankings in conceptual ability. Supervisors were highest in human skill (41%). They did, however, show a fairly even balance between conceptual (30%) and technical (30%) skill as a #1 ranking. Their holistic dominance patterns, likewise support their nominators' perceptions of their exhibited skill. It is particularly interesting to note their high ranking in human skill in comparison to the large proportion of this group with a dominance in the lower right quadrant (Table II: Code 2111 = 22%; Code 2112 = 17%). These two codes account for 39 percent of the group; their #1 ranking in human skill was 41 percent.

What significance was found between dominance in a particular hemisphere (and/or quadrant) and the strength of subjects' rankings on the three Katz skills? As shown in Table VI, there is a definite probability that those ranked highly in conceptual ability will have a dominance in the right hemisphere ($p < .0004$). In addition, the higher the ranking one receives in conceptual skill, the more likely that person is to have a right-brain dominance ($p < .03$) as reflected in Table VII. This is further refined by viewing specifically the upper right quadrant. As shown in Table VIII, there is a strong probability ($p < .0003$) that those with #1 conceptual rankings will likewise have a #1 dominance in conceptual skill.

Directional trends seem to indicate a likelihood of the following: A #1 ranking on Technical Skill I = primary dominance in upper left quadrant ($p < .19$); #1 ranking in Human Skill = primary dominance in lower right quadrant ($p < .15$). Data suggests also, when considering percentages of subjects, that a #1 ranking in Technical Skill II will likewise reflect a primary dominance in the lower left quadrant (33% to 1%).

V. Conclusion of Study

How significant are these findings to educational reform? Results seem to suggest that those educational leaders most crucial to the system's forward movement are hampered by a status quo oriented left-brained style of problem solving and are being judged effective based on their ability in technical rather than visionary expertise. Such an orientation is in direct conflict to Katz' hierarchy calling for strong conceptual ability at the top echelons of the organization. Likewise, such findings are not compatible with the results of Mintzberg (1976), Duigan (1980) and Willis (1980) who characterized the superintendency as a position demanding spontaneous decision making, flexibility, and an intuitive feel for the organization and situations relative to it. Strong right-brained skills of intuition

and conceptualization must accompany analytical ability if real reform is to take place.

There is some question, based on the results from this research, if principals (who were more balanced in cognitive style than superintendents) will be able to actualize their creative potential under such leadership. Should superintendents exert pressure for a "refinement of the established order," will the scales be tipped in the direction of conformity? And what of the truly creative principals and supervisors? Will they, under pressure, leave the custodial organization rather than risk intimidation? If they remain, will they allow their creative potential to lie dormant and unused?

Finally, how long will education continue to waste the creative leadership potential found among female educators? Data from this study indicate that females exhibit a greater tendency toward holistic thought patterns and conceptualization than do the males surveyed, yet they comprise only 14 percent of the line positions in this study!

The last issue for consideration concerns the training of future school administrators. Departments of Educational Leadership are in a position to bridge the gap between what is and what could be. It is imperative that more effective selection of future leaders take place and that, in conjunction, an appropriate system of career guidance be initiated. Person-job fit should be considered by selecting individuals who possess the cognitive qualities essential for new directives in leadership.

Certainly, the scope of training within departments of educational leadership should be reconsidered. Perhaps the traditional emphasis on maintaining an organization should be examined in proper perspective. Are there perhaps certain aspects of an outdated system that it is not wise to maintain? Perhaps there should be a greater emphasis on newer theories of administration (i.e., the

development of human potential, vision, etc.) rather than the practicalities associated with mere technical aspects.

VI. Concluding Remarks

Education has embarked on a new venture: one of reform. If educational leaders are to bring about the changes which are crucial to the very existence of public education, they must develop a new perspective: one that is visionary, intuitive and oriented to the building of human potential. They must put aside those status quo methods which may have worked in the past and open their minds to the possibilities that lie ahead. For many current leaders, this may require a conscious effort to modify the very fabric of their thought. It is a journey worth consideration!

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APPENDIX

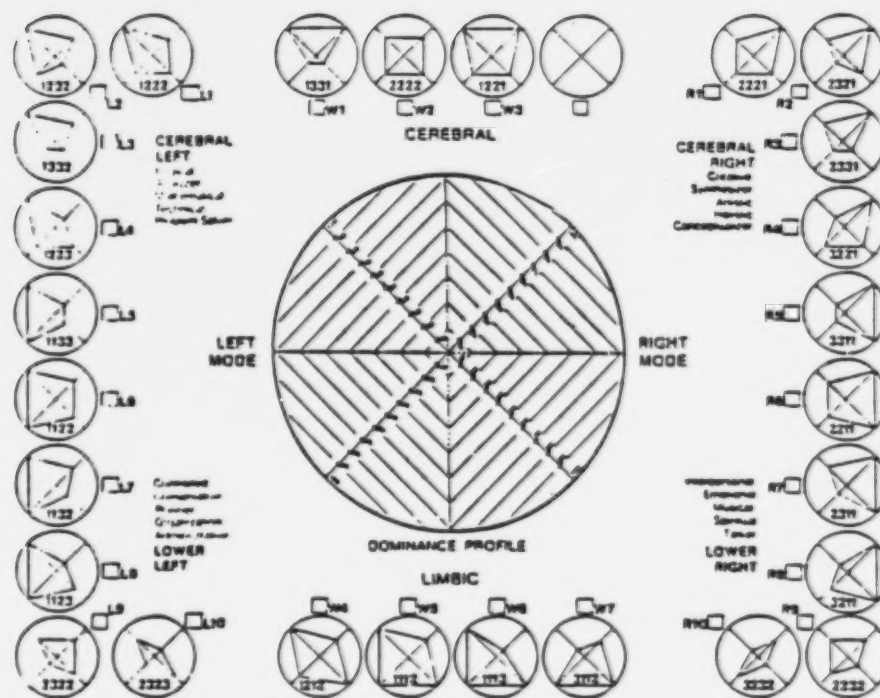


Figure 25. Most Common Brain Dominance Profiles.

Source: Ned Herrmann. Materials presented at Application Workshop, Herrmann Brain Dominance Instrument, Lake Lure, North Carolina, February 1983.

Group I:

Right/Whole Brain

Codes: 1111; 1211; 1121; 1221; 2111;
2211; 1131; 1112; 2121 .

Group II:

Left/Limbic

Codes: 1122, 1123; 1132; 2122; 2112

Figure 26. Dominance Profile Grouping. ---

Source: Classification of Codes into larger clusters was done by researcher after confering by phone with Ned Herrmann on November 26, 1983.

Group I:

Right/Whole Brain

Codes: 1111; 1211; 1121; 1221; 2111;
2211; 1131; 1112; 2121 .

Group II:

Left/Limbic

Codes: 1122, 1123; 1132; 2122; 2112

Figure 26. Dominance Profile Grouping. ---

Source: Classification of Codes into larger clusters was done by researcher after confering by phone with Ned Herrmann on November 26, 1983.

<u>Profile</u>	<u>Classification</u>
1111	Whole Brained
1121, 1211, 1131	Whole Brained Cerebral
1221	Double Dominant Cerebral
1112, 2111	Whole Brained Limbic
2211	Right Brained
2121	Double Dominant Left Limbic/ Right Cerebral
2122	Left Limbic
1122, 1123, 1132	Left Brained
2112	Double Dominant Limbic

Figure 27. Profile Clusters* of Administrative Groups.

*As identified and classified by Ned Herrmann in phone conversation on November 26, 1983.

RATING DEFINITIONS

SKILLS OF AN EFFECTIVE ADMINISTRATOR

Adapted From:

Katz, Robert L. "Skills of an Effective Administrator,"
Harvard Business Review, Sept-Oct., 1974, Vol. 52, No. 5, 90-102.

Technical Skill: Having analytical skill and knowledge within a specialized field, and being able to incorporate the tools and techniques representative of that field.

Human Skill: Being able to work with people in a perceptive, empathetic manner. Having sensitivity to the needs of others within the organization and taking action in consideration of those needs.

Conceptual Skill: Having the ability to sense the organization as a whole and to perceive the total situation relative to it. The ability to visualize and to creatively move the organization forward.